

Description

CARRYING HANDLE ASSEMBLY OF DRUM TYPE WASHING MACHINE

Technical Field

- [1] The present invention relates to a washing machine, and more particularly, to a carrying handle assembly for use in the transportation of a washing machine.

Background Art

- [2] Generally, a washing machine comprises a tub containing wash water and detergents in its lower region, and a drum mounted in the tub to place laundry therein. As the drum is rotated, the washing machine performs laundry washing, rinsing, and spin-drying operations.
- [3] Such a washing machine is an appliance to remove contaminants attached to laundry by utilizing appropriate detergents and mechanical forces.
- [4] Specifically, in the case of a drum type washing machine, detergents, wash water, and laundry are placed in a horizontally mounted drum to remove contaminants attached to the laundry as the drum is rotated upon receiving a driving force of a motor. The drum type washing machine substantially prevents entanglement and damage of laundry, uses less wash water, and achieves impact and scrubbing washing effects.
- [5] Considering the general configuration of the washing machine, it comprises a cabinet defining the outer appearance of a machine body, a tub mounted in the cabinet to contain wash water, a cylindrical drum rotatably mounted in the tub to contain laundry, and a drive unit to rotate the drum.
- [6] FIG. 1 illustrates the rear-side structure of a conventional drum type washing machine. Referring to FIG. 1, the drum type washing machine externally comprises a top plate 10 forming an upper surface of a machine body 1, a front plate 20 forming a front surface of the body 1, a pair of side plates 30 forming opposite lateral surfaces of the body 1, a rear plate 40 forming a rear surface of the body 1, and a base plate 50 forming a lower surface of the body 1.
- [7] The side plates 30 are provided with handles 31 for use in carrying. The rear plate 40 is provided with a power supply line 41 for supplying electric power, and a drainage hose 42 for draining wash water.
- [8] The top plate 10 and the rear plate 40 are connected and fixed to each other by means of separate coupling brackets 60.
- [9] The conventional drum type washing machine configured as stated above washes laundry by utilizing the chemistry of detergents, and wash water flows and frictional

force caused by rotation of the drum.

[10] Drum type washing machines, however, have problems as follows in relation with carrying thereof.

[11] Firstly, when ascending or descending stairs while carrying the drum type washing machine, in terms of the human bodily structure, it is very difficult to assume a convenient posture while gripping the handles 31 provided at the side plates 30.

[12] Secondly, when two persons, namely, carriers, try to pass through a narrow space, such as a narrow door, with carrying the drum type washing machine, it is typically impossible to carry the washing machine while gripping the handles 31 provided at the side plates 30. To pass through the narrow space, for example, as shown in FIG. 2, the drum type washing machine must be carried in a tilted state. Thus, the carriers have to grip the rear upper end and the front lower end of the washing machine, respectively, instead of using the handles 31.

[13] Gripping the rear upper end of the washing machine, however, is very inconvenient because no handle 31 is provided at the rear upper end. Occasionally, the washing machine may be dropped and damaged during carrying if the carriers fail to bear the weight of the washing machine.

Disclosure of Invention

Technical Problem

[14] Accordingly, the present invention is directed to a carrying handle assembly of a drum type washing machine that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[15] An object of the present invention is to provide a carrying handle assembly of a drum type washing machine which improves the structure and position of a rear-side handle thereof, thereby enabling convenient and stable carrying of the drum type washing machine.

Technical Solution

[16] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[17] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a carrying handle assembly of a drum type washing machine comprises a coupling bracket to connect a top plate, that forms an upper surface of a machine body, to a rear plate that forms a

rear surface of the body, and a rear-side handle provided at the coupling bracket for convenient carrying of the body.

- [18] The rear-side handle may be integrally formed at a lower end of the coupling bracket.
- [19] The coupling bracket may include a first coupling portion coupled to a rear surface of the top plate and having a first through-hole formed at a flat plane portion thereof, and a second coupling portion extending downward from the first coupling portion to be coupled to an upper end portion of the rear plate and having a second through-hole formed at a flat plane portion thereof.
- [20] The carrying handle assembly may further comprise positioners provided at a front surface of the coupling bracket to determine a coupling position of the coupling bracket.
- [21] The positioners may include one or more positioning protrusions provided at the front surface of the coupling bracket corresponding to the rear surface of the top plate, and a gap insertion protrusion provided at the front surface of the coupling bracket at a position corresponding to a connecting region between the top plate and the rear plate.
- [22] The carrying handle assembly may further comprise an extension provided at the front surface of the coupling bracket to allow the coupling bracket to come into close contact with the rear plate.
- [23] The carrying handle assembly may further comprise at least one strength-reinforcement element for the rear-side handle.
- [24] The strength-reinforcement element may be a triangular rib connected at one side end to a rear surface of the coupling bracket and at a lower end to an upper surface of the rear-side handle.
- [25] The rear-side handle may have a plurality of finger contact recesses formed at a lower surface thereof.
- [26] The rear-side handle may have a bent holding portion extending downward from a distal end thereof, and a plurality of finger contact recesses formed at a lower surface of the bent holding portion.
- [27] In another aspect of the present invention, there is provided a carrying handle assembly of a drum type washing machine comprising a coupling bracket including a first coupling portion coupled to a top plate, that forms an upper surface of a machine body, and having a first through-hole formed at a flat plane portion thereof, and a second coupling portion extending downward from a lower end of the first coupling portion to be coupled to a rear plate, that forms a rear surface of the body, and having a second through-hole formed at a flat plane portion thereof, and a rear-side handle provided on the coupling bracket at a connecting region between the first and second coupling portions for convenient carrying of the body.

- [28] The carrying handle assembly may further comprise positioners provided at a front surface of the coupling bracket to determine a coupling position of the coupling bracket.
- [29] The positioners may include one or more positioning hole formed at the top plate, one or more positioning protrusion provided at a front surface of the first coupling portion to correspond to the positioning holes, and a gap insertion protrusion provided at the front surface of the coupling bracket at a position corresponding to a connecting region between the top plate and the rear plate.
- [30] The carrying handle assembly may further comprise an extension provided at the second coupling portion of the coupling bracket to allow the second coupling portion to come into close contact with the rear plate.
- [31] The carrying handle assembly may further comprise at least one strength-reinforcement element for the rear-side handle, and the strength-reinforcement element may be a triangular rib connected at one side end to a rear surface of the coupling bracket and at a lower end to an upper surface of the rear-side handle.
- [32] The rear-side handle may have a plurality of finger contact recesses formed at a lower surface thereof.
- [33] The rear-side handle may have a bent holding portion extending downward from a distal end thereof, and a plurality of finger contact recesses formed at a lower surface of the bent holding portion.
- [34] In yet another aspect of the present invention, there is provided a carrying handle assembly of a drum type washing machine comprising a coupling bracket including a first coupling portion coupled to a top plate, that forms an upper surface of a machine body, and having a first through-hole formed at a flat plane portion thereof, and a second coupling portion extending downward from a lower end of the first coupling portion to be coupled to a rear plate, that forms a rear surface of the body, and having a second through-hole formed at a flat plane portion thereof, a rear-side handle provided at the coupling bracket for convenient carrying of the body, positioners including one or more positioning protrusions provided at a front surface of the first coupling portion and a gap insertion protrusion provided at a front surface of the coupling bracket at a position corresponding to a connecting region between the top plate and the rear plate, the positioners providing a coupling position of the coupling bracket, and at least one strength-reinforcement connected at one end to a rear surface of the coupling bracket and at the other end to an upper surface of the rear-side handle to reinforce a strength of the rear-side handle.
- [35] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

Advantageous Effects

- [36] As apparent from the above description, the present invention has the following effects.
- [37] Accordingly, the present invention, when ascending or descending stairs or passing through a narrow space, the carrier can conveniently carry the drum type washing machine with a balanced posture by gripping the rear-side handle provided at the rear surface of the machine.
- [38] Secondly, the coupling bracket is integrally formed with the rear-side handle to form a single unit, thereby enabling a reduction in the manufacturing cost of products and simplifying the overall assembling process thereof.
- [39] Thirdly, by providing the positioners at the coupling bracket that connects the top plate and the rear plate of the machine to each other, the carrying handle assembly can be conveniently coupled to the washing machine at the predetermined coupling position.
- [40] Fourthly, by virtue of the strength reinforcement triangular ribs provided at the rear-side handle, the carrying handle assembly has no risk of damage even if the weight load of the washing machine is applied to the rear-side handle.
- [41] Fifthly, the bent holding portion is provided at the rear-side handle to catch the carrier's fingertips when the washing machine is carried in a rearwardly tilted state, thereby enabling the carrier to firmly grip the washing machine.
- [42] The finger contact recesses provided at the rear-side handle, furthermore, increase a contact force between the rear-side handle and the carrier's hand during carrying of the washing machine, thereby enabling more stable carrying of the washing machine.

Brief Description of the Drawings

- [43] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:
- [44] FIG. 1 is a perspective view illustrating the rear-side structure of a conventional drum type washing machine;
- [45] FIG. 2 is a schematic view illustrating an example of carrying the conventional drum type washing machine;
- [46] FIG. 3 is a perspective view illustrating the installation of a carrying handle assembly of a drum type washing machine according to a first embodiment of the present invention;
- [47] FIGs. 4 and 5 are perspective views of the carrying handle assembly according to the first embodiment of the present invention;

- [48] FIGs. 6 and 7 are perspective views illustrating alternative embodiments of a rear-side handle included in the carrying handle assembly according to the first embodiment of the present invention;
- [49] FIG. 8 is a perspective view illustrating a carrying handle assembly, installed at a rear surface of a drum type washing machine, according to a second embodiment of the present invention;
- [50] FIGs. 9 and 10 are perspective views of the carrying handle assembly according to the second embodiment of the present invention; and
- [51] FIGs. 11 and 12 are perspective views illustrating alternative embodiments of a rear-side handle included in the carrying handle assembly according to the second embodiment of the present invention.

Best Mode for Carrying Out the Invention

- [52] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts, and thus a detailed description thereof will be omitted.
- [53] FIG. 3 is a perspective view illustrating the installation of a carrying handle assembly of a drum type washing machine according to a first embodiment of the present invention. FIGs. 4 and 5 are perspective views of the carrying handle assembly according to the first embodiment of the present invention. FIGs. 6 and 7 are perspective views illustrating alternative embodiments of a rear-side handle included in the carrying handle assembly according to the first embodiment of the present invention.
- [54] Referring to FIG. 3, in the embodiment of the present invention, the drum type washing machine comprises the top plate 10 forming an upper surface of the machine body 1, the front plate 20 forming a front surface of the body 1, the pair of side plates 30 forming opposite lateral surfaces of the body 1, the rear plate 40 forming the rear surface of the body 1, the base plate 50 forming a lower surface of the body 1, and at least one carrying handle assembly 100.
- [55] The carrying handle assembly 100 of the drum type washing machine comprises a coupling bracket 110, and a rear-side handle 120.
- [56] In the first embodiment of the present invention, the rear-side handle 120 is integrally formed at a lower end of the coupling bracket 110.
- [57] Referring to FIGs. 4 and 5, the coupling bracket 110 serves to connect the top plate 10 with the rear plate 40. The coupling bracket 110 consists of a first coupling portion 111 and a second coupling portion 112.
- [58] The first coupling portion 111 is coupled to a rear surface of the top plate 10, and

has a first through-hole 101 formed at a flat plane portion thereof to fasten a screw 200 to the rear surface of the top plate 10 therethrough. In this case, preferably, a first fastening hole 11 is formed at the rear surface of the top plate 10 to correspond to the first through-hole 101.

[59] The second coupling portion 112 extends downward from the first coupling portion 111 to be coupled to an upper end portion of the rear plate 40, and has a second through-hole 102 formed at a flat plane portion thereof. In this case, preferably, a second fastening hole 12 is formed at the upper end portion of the rear plate 40 to correspond to the second through-hole 102.

[60] The carrying handle assembly 100 of the drum type washing machine further comprises positioners 130 to facilitate the determination of a coupling position as well as coupling procedure of the coupling bracket 110.

[61] The positioners 130 include one or more positioning protrusions 131 and a gap insertion protrusion 133.

[62] In the first embodiment of the present invention, two positioning protrusions 131 protrude from a front surface of the first coupling portion 111 toward the top plate 10 to be fixed to the rear surface of the top plate 10. In this case, preferably, positioning holes 13 are formed at the rear surface of the top plate 10.

[63] The gap insertion protrusion 133 protrudes forward from a connecting region between the first and second coupling portions 111 and 112 to be inserted into a gap defined between the top plate 10 and the rear plate 40, thereby setting the coupling position of the coupling bracket 110.

[64] The carrying handle assembly 100 of the drum type washing machine further comprises an extension 150 provided at a front surface of the coupling bracket 110 to allow the coupling bracket 110 to come into close contact with the rear plate 40. For example, if the top plate 10 has a width greater than that of the rear plate 40 to enclose the rear plate 40, and thus the rear surface of the top plate 10 protrudes beyond the rear plate 40, the extension 50 horizontally levels the rear surface of the top plate 10 with the upper end portion of the rear plate 40, thereby allowing the coupling bracket 110 to come into close contact with the rear plate 40.

[65] The rear-side handle 120 protrudes rearward from the lower end of the coupling bracket 110 to provide a convenient product gripping and carrying.

[66] The carrying handle assembly 100 of the drum type washing machine further comprises a strength-reinforcement element for the rear-side handle 120.

[67] The strength-reinforcement element includes at least one triangular rib 160 connected at one side end thereof to a rear surface of the first coupling portion 111 and a lower end thereof to an upper surface of the rear-side handle 120. Preferably, in consideration of the size of the rear-side handle 120 and load applied to the rear-side

handle 120 during carrying, two triangular ribs 160 may be provided at the rear-side handle 120.

[68] Referring to FIG. 5, the rear-side handle 120 has a plurality of finger contact recesses 170 formed at a lower surface thereof. Preferably, four finger contact recesses 170 are formed at the lower surface of the rear-side handle 120 to come into close contact with the carrier's fingers. This consequently increases a contact force between the rear-side handle 120 and the carrier's hand, enabling more stable product carrying.

[69] Referring to FIG. 6 and 7, alternative embodiments of the rear-side handle 120 are illustrated. In the alternative embodiment of FIG. 6, the rear-side handle 120 has a bent holding portion 180 extending downward from a distal end of the handle 120. When the drum type washing machine is carried in a rearwardly tilted state, the bent holding portion 180 serves to catch the carrier's fingertips, thereby enabling the carrier to firmly grip the washing machine. In the alternative embodiment of FIG. 7, a rear-side handle 120 is configured such that the finger contact recesses 170 are formed at a lower surface of the bent holding portion 180 to increase the contact force between the handle 120 and the hand. As will be easily understood, the rear-side handles 120 and 120 of the alternative embodiments are effective to provide more stable product carrying.

[70] Unexplained reference numbers 41 and 42 denote a power supply line for supplying electric power to the washing machine, and a drainage hose for discharging wash water to the outside of the washing machine, respectively.

[71] The carrying handle assembly 100 of the drum type washing machine configured as stated above also serves to couple the top plate 10 with the rear plate 40. Now, the coupling operation of the assembly 100 will be explained.

[72] First, the positioning protrusions 131 are inserted into the positioning holes 13 formed at the rear surface of the top plate 10, and simultaneously, the gap insertion protrusion 133 is inserted into a gap defined between the top plate 10 and the rear plate 40, thereby determining the coupling position of the coupling bracket 110.

[73] After the coupling position of the coupling bracket 110 is determined, a screw 200, which is previously penetrated through the first through-hole 101 of the first coupling portion 111, is fastened into the first coupling hole 11 formed at the rear surface of the top plate 10. Thereby, the first coupling portion 111 is fixed to the top plate 10.

[74] Successively, another screw 200, which is previously penetrated through the second through-hole 102 of the second coupling portion 112, is fastened into the second coupling hole 12 formed at the upper end portion of the rear plate 40. Thereby, the second coupling portion 112 is fixed to the rear plate 40.

[75] In this way, the top plate 10 and the rear plate 40 are coupled to each other by means of the coupling bracket 100.

- [76] Now, an example of carrying the drum type washing machine using the carrying handle assembly 110 when ascending or descending stairs or passing through a narrow space will be explained.
- [77] First, to prevent the power supply line 41 and drainage hose 42 mounted at the rear plate 40 from being dragging along the floor, the drainage hose 42 is bound and fixed by means of the power supply line 41.
- [78] Then, the drum type washing machine is tilted rearward to a predetermined inclination as the carrier pulls down on a pair of the rear-side handles 120 mounted at the rear upper end of the washing machine.
- [79] In such a tilted state, the drum type washing machine is carried with the help of the other carrier gripping legs (not shown) mounted at front corners of the base plate 50.
- [80] In this way, the drum type washing machine can be conveniently and stably carried even when ascending or descending stairs or passing through a narrow space.
- [81] Hereinafter, a carrying handle assembly of the drum type washing machine according to a second embodiment of the present invention will be explained with reference to FIGs. 8 to 12. In the following description, the same reference numbers as the first embodiment will be used throughout the drawings to refer to the same or like parts, and thus a detailed description thereof will be omitted.
- [82] FIG. 8 is a perspective view illustrating a carrying handle assembly, installed at the rear surface of the drum type washing machine, according to a second embodiment of the present invention. FIGs. 9 and 10 are perspective views illustrating the carrying handle assembly according to the second embodiment of the present invention. FIGs. 11 and 12 are perspective views illustrating alternative embodiments of a rear-side handle included in the carrying handle assembly according to the second embodiment of the present invention.
- [83] Referring to FIGs. 8 and 9, the carrying handle assembly 100a of the drum type washing machine according to the second embodiment of the present invention comprises a first coupling bracket 110a and a rear-side handle 120a. The first coupling bracket 110a includes a first coupling portion 111a to be coupled to the top plate 10 that forms the upper surface of the machine body, and a second coupling portion 112a extending downward from a lower end of the first coupling portion 111a to be coupled to the rear plate 40 that forms the rear surface of the body. The first and second coupling portions 111a and 112a have the first and second through-holes 101 and 102 formed at flat plane portions thereof, respectively. The rear-side handle 120a is provided at a connecting region between the first and second coupling portions 111a and 112a for the convenient carrying of the washing machine.
- [84] More specifically, the first and second coupling portions 111a and 112a of the coupling bracket 110a are located at the upper and lower sides of the rear-side handle

120a, respectively.

[85] The carrying handle assembly 100a of the drum type washing machine further comprises the positioners 130 provided at a front surface of the coupling bracket 110a to determine the coupling position of the coupling bracket 110a.

[86] The positioners 130 include the positioning holes 13 formed at the top plate 10, the positioning protrusions 131 provided at the front surface of the first coupling portion 111a to correspond to the positioning holes 13, and the gap insertion protrusion 133 provided at the front surface of the coupling bracket 110a at a position corresponding to the connecting region between the top plate 10 and the rear plate 40.

[87] Preferably, the carrying handle assembly 100a of the drum type washing machine further comprises the extension 150 provided at the second coupling portion 112a of the coupling bracket 110a to allow the second coupling portion 112a to come into close contact with the rear plate 40.

[88] The carrying handle assembly 100a of the drum type washing machine further comprises a strength-reinforcement element for the rear-side handle 120a. The strength-reinforcement element includes the triangular rib 160 connected at one side end thereof to a rear surface of the coupling bracket 110a and at a lower end thereof to an upper surface of the rear-side handle 120a.

[89] Referring to FIG. 10, the rear-side handle 120a has the plurality of finger contact recesses 170 formed at a lower surface thereof to increase a contact force between the rear-side handle 120a and the carrier's hand.

[90] Referring to FIG. 11 and 12, preferred alternative embodiments of the rear-side handle 120a are illustrated. In the alternative embodiment of FIG. 11, a rear-side handle 120a' has the bent holding portion 180 extending downward from a distal end thereof. In the alternative embodiment of FIG. 12, a rear-side handle 120a~ is configured such that the finger contact recesses 170 are formed at the lower surface of the bent holding portion 180.

[91] The coupling procedure and operational effects of the carrying and coupling handle assembly of the second embodiment configured as stated above are identical to those of the first embodiment of the present invention.

Industrial Applicability

[92] Accordingly, the present invention provides a carrying handle assembly of a drum type washing machine in which positioners are provided at a coupling bracket, that connects a top plate and a rear plate of the machine to each other, to facilitate the determination of a coupling position of the carrying handle assembly, thereby enabling more convenient coupling of the carrying handle assembly.

[93] Secondly, by virtue of triangular ribs provided at a rear-side handle of the handle

assembly, the carrying handle assembly has no risk of damage even if the weight load of the washing machine is applied to the rear-side handle.

[94] Thirdly, the rear-side handle is provided with a bent holding portion to catch the carrier's fingertips when the washing machine is carried in a rearwardly tilted state, thereby enabling the carrier to firmly grip the washing machine.

[95] Fourthly, the rear-side handle is provided with finger contact recesses to increase a contact force between the rear-side handle and the carrier's hand during carrying of the washing machine, thereby enabling more stable carrying of the washing machine.

[96] In this way, when ascending or descending stairs or passing through a narrow space while carrying the drum type washing machine, the carrying handle assembly of the present invention enables more balanced and convenient carrying of the washing machine, resulting in improved reliability of products.